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AUTHOR Kassier, Marjorie Rose
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ABSTRACT

The study examined the effectiveness of videotapes showing cooperative prosocial interaction between models on the behavior of 6 female and 14 male severely emotionally disturbed withdrawn children (aged between 9 and 14 years old). An introductory review of the literature considers general modeling theory, variables of the modeling act and their effects on behavior, and classification of modeled behaviors. The study's experimental Ss, paired in same sex dyads, viewed a tape showing two models engaged in verbal and nonverbal cooperative interactive play with marble raceways. Control Ss viewed a tape showing the models playing independently with the raceways. Ss were observed for a 5 minute preintervention and a 10 minute postintervention period playing with the raceway toys. Results indicated: (1) experimental Ss engaged in more associative and cooperative behaviors than control Ss following the videotape; (2) in particular, experimental Ss demonstrated more prosocial proximal and face to face body movements than did control Ss; (3) experimental Ss used more prosocial language; and (4) experimental Ss did not produce a greater quantity of total language. (DB)

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TELEVISED MODELS AS AGENTS OF BEHAVIOR CHANGE: INDUCING PRO-SOCIAL INTERACTION AMONG SEVERELY WITHDRAWN CHILDREN

Marjorie Rose Kassier, Ed.D.

Director, Program in Special Education
Our Lady of the Lake University
San Antonio, Texas 78285

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for Exceptional Children, April 12-17, 1981, New York, New York

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The mass media, particularly television, have increasingly been credited with providing significantly potent models for social behavior. Concerns about the impact of the models provided by television resulted in the appointment of the Surgeon General's Scientific Advisory Committee on Television and Social Behavior, whose report Television and Growing Up: The Impact of Televised Violence (1972) provided evidence that, "under certain limited conditions, television viewing may lead to an increase in aggressive behavior" (p. 183). The focus here, however, is not the rather tentative findings of the 23 research projects funded by the Committee, but the existence of the Committee itself. The public pressure resulting in the Committee's formation, the constant controversy over the content of television programs, subsequent books such as Television and Antisocial Behavior: Field Experiments (Milgram & Shotland, 1973), and the proliferation of Archie Bunker T-Shirts and Kojak cults all testify to the report's contention that, "It is difficult to overstate the pervasiveness of American television" (p. 82).

Television's influence on its viewers' behavior is of critical concern to mental health professionals. Evidence is accumulating that the effectiveness of modeling is increased if the observers are emotionally aroused (Walters, Llewellyn-Thomas, & Archer, 1962; Walters, Marshall, & Shooter, 1960), or have been exposed to experiences associated with institutionalization, (Stevenson & Cruse, 1961; Stevenson & Fabel, 1961). Hartman's (1969) work with adolescent delinquents showed that subjects with longer records of anti-social acts behaved more

punitively than subjects with less extensive records, particularly when they were aroused and observed televised agressive models. Of particular concern to mental health professionals are Gelfand's (1967) findings that children who have had a history of failure and negative reinforcement of independent behavior are more likely to imitate the behavior of others. Although this could be a positive tool in the hands of a pro-social model, its negative implications are obvious.

Many exceptional children spend a great deal of their leisure time watching television. In many institutional or residential settings television viewing is a prime recreational activity; it is a rare day room that does not feature a television set. More mildly handicapped children frequently use the television as a surrogate playmate, encouraged by parents who cannot find suitable leisure activities for their child.

The exceptional child's susceptibility to television models becomes a crucial concern when one considers the dearth of positive, live peer models in the environment of many handicapped children. In particular, the severely withdrawn child, living in a basically solitary environment, having little contact with his peers, is susceptible to the influence of televised models. Television could become a profound pro-social, positive force in the world of the severely withdrawn handicapped. The dearth of knowledge in the effective use of television as a source of pro-social instead of antisocial models is a shame when it is considered how influential television is on the average, normal child, and is a crime when consideration is given to the potential uses of television as a therapeutic, pro-social tool in the treatment of disturbed children.

GENERAL MODELING THEORY

Precisely which model characteristics incite imitative learning has been the subject of extensive research. The amount of warmth projected by the model (Mussen, 1961; Sears, Rau & Albert, 1965), parental nurturance (Bandura & Huston, 1961; Mussen & Parker, 1965); non-threatening qualities of the model (Bandura, Ross & Ross, 1965; Hicks, 1965), direct reinforcement contingencies (Baer, Peterson, & Sherman, 1967; Baer & Sherman, 1964), vicarious reinforcement (Bandura, 1965; Berger, 1961), and appropriateness of the modeling act (Walters & Parks, 1964, 1965), as well as the more obvious characteristics of sex (Bandura, 1965; McCoby & Wilson, 1957) and age (Bandura & Kupers, 1964; Hicks, 1965) have been cited as some influential cues to imitative learning.

Bandura(1969a, 1969b) discusses four complex subprocesses which operate during observational learning; attentional, motoric reproduction, retention, and motivational processes.

Attentional Processes

Simple exposure to stimuli does not insure that the observer will attend to, accurately perceive, or select the relevant cues from the environment. Feuerstein and Rand (1974) claims that deficits in these input skills, rather than elaborational or output deficits, are most responsible for inadequate learning processes among the culturally different. Attentionality is influenced by stimulus properties (such as intensity, novelty, attractiveness), by model attributes (such as social status, competency, sex, age), by observer characteristics

(such as emotional state, previous learning experiences, perceived similarity to the model), and by incentive conditions.

Motoric Reproduction Processes

The internalization of stimuli requires symbolic representations of the modeled behaviors, in either imaginal or verbal form. These representations can then be utilized to guide overt motoric reproductions. Novel behaviors can also be developed by mental manipulation or symbolic codes. Facility in acquiring modeled patterns, or developing new patterns, is increased if the pattern is a composite of previously acquired behaviors.

Retention Processes

Once discriminatory attention has been paid to modeled patterns and they are symbolically coded, biochemical and neurophysiological memory mechanisms come into play. Although the specifics of these memory mechanisms, which are beyond the scope of this review, have not been decisively explained, research has identified particular processess which influence retention. Rehearsal of the modeled behaviors is generally assumed to facilitate learning and retention Bandura (1969a). Gerst (1971) found that symbolic coding of modeled stimuli facilitated both immediate and delayed reproduction of behaviors.

Motivational Processes

Once an observer has focused on, acquired, and retained modeled patterns, processes which themselves are influenced by incentive conditions, the behaviors may only be overtly performed under favorable motivational conditions (Bandura, 1965). There is an extensive litera-

ture describing the effects of positive and negative, primary and secondary reinforcers on learning and performance of modeled behaviors.

In summary, modeled, observational or identificatory learning is a multiprocess phenomenon, consisting of attentional, motoric reproduction, retention, and motivational processes. The facility with which an individual learns through observation, and performs acquired behaviors, is determined by variables affecting attentionality to modeled stimuli their transformation into representational forms, susequent manipulation, retention, and overt or covert performance under varying motivational conditions.

VARIABLES OF THE MODELING ACT AND THEIR EFFECTS ON BEHAVIOR

Model/observer Characteristics: Age

Although it is generally assumed that adults are influenced more by adult peers than by child models, there is far less agreement as to the age of the most influential models for adolescents and young children. Shifting cultural modes and institutions complicate the question even further. Summarizing, research has shown that children will imitate the behaviors of adult models more precisely than peer models (Bandura & Kupers, 1964; Jakubczak & Walters, 1959), and adult models have greater long-term effects than peers (Hicks, 1965). Bandura and Kupers (1964) do point out, however, that this demonstrated influential strength of adult over peer models may be weakened in stituations where the subjects cannot, or think that they cannot, match the high performance of the adult models.

Model/observer Characteristics: Sex

The interaction of sex with model influence and subject behavior

is apparently complex, and evidently inconsistent. Flanders (1968) in his extensive review of the literature on modeling, concluded that experiments that investigated the interaction of models' sex with elicited imitative behaviors have yielded few dependable effects. Although the work of a few researchers (Bandura, Ross and Ross, 1961, 1963b; Hicks, 1965) have focused on the interaction of sex and observational learning, their conclusions are, at first, contradictory.

If one categorizes modeling research according to the type of behaviors modeled and sex of model, and then looks for interactions with the performance level of male versus female subjects, one can then discern fairly consistent patterns.

Research on the sex x model interaction has tentatively shown that male models exert more influence than female models on both male and female children. However, this influence is significantly effected by the sex appropriateness of the act (Bandura, Ross and Ross, 1961, 1963b) and the frequently overlooked distinction between the acquisition and spontaneous performance of behaviors (Bandura, 1965).

In an experiment that demonstrated the significant effects of aggressive play behaviors exhibited by live models, filmed models, and cartoon characters on the spontaneous play of preschoolers, Bandura, Ross and Ross, (1963b) found that the influence of the subjects' sex was more clear cut than the influence of the models' sex. The male preschoolers exhibited significantly more total aggression, more imitative aggression, and more non-imitative aggression than female subjects exposed to the same models.

Unfortunately, if one turns to research that investigates the

modeling of distinctly pro-social behaviors, the clarity of the implications is lost (Bryan, 1975). Rather than clearly supporting the basic hypothesis that sex of the observer is a primary interaction and that male models are more potent in eliciting aggressive behaviors, the research findings point to cross-sex imitation as a crucial factor. Cross-sex imitation, particularly by girls, was constantly elicited from school aged children, possibly reflecting more cultural tolerance for cross-sex behavior displayed by females (Bandura, Ross and Ross, 1963a).

Reviewing the research, one sees a strong case presented for the strength of the sexual perspective of preschool observers as a variable in imitation of aggressive behaviors, the relative strength of the male models in eliciting aggressive and nonaggressive play among preschoolers, and the emergence of a cross-sex imitation factor on the part of older subjects viewing pro-social models.

The proposal that cross-sex imitation of pro-social behavior is common among preadolescents, is given further support by Bandura's (1965) findings concerning the interaction of reinforcement and performance of sex linked behaviors.

Bandura found that when tangible reinforcement was given to the subjects for imitation of aggression, previously significant differences between male and female subjects' performances were eliminated. On the initial spontaneous play performance measures, the three groups of female subjects were significantly different and the three male groups were not. On measures following the introduction of rewards directly to the subjects, which elicited behaviors previously acquired but not performed, the differences between groups were practically erased.

Boys in the model rewarded or no consequences groups performed equally in both spontaneous play and subject rewarded conditions. Boys who had observed the model punished, and all of the girls' groups showed significant increases in aggressive imitation when directly, contingently rewarded. Bandura concluded that the introduction of direct incentives,

> "practically wiped out the prior performance disparity (between sexes) (and) strongly suggests that the frequently observed sex differences in aggression may reflect primarily differences in willingness to exhibit aggressive responses, rather than deficits in learning or masculine role identification." (p. 594)

Model/observer Characteristics: Race

The ethnic factor in observational learning has been the subject of much speculation. The interaction of the subject's race and the model's or examiner's perceived race could possibly be a crucial factor in the success or failure of the modeling act. The racial concerns of the 1960s, coupled with increasing attention to the effects of cultrual bias in testing situations, have led to a proliferation of claims concerning the effects of ethnicity, all too often based on unreliable research.

Ratusnik and Koenigsknecht (1977) summarize this unfortunate trend. They point out there has not been a sufficient number of vigorously conducted experiments to come to any firm conclusions regarding the biracial testing hypothesis. Small sample size, lack of control for SEC, or sex of examiners and testees, and insufficient numbers of

examiners to control for tester effects, disallow conclusive results (Brand, Padilla, & Ruiz, 1974; Ratusnik & Koenigsknecht, 1977).

In their own research, Ratusnik and Koenigsknecht (1977) controlled for some of these factors. Male and female preschool subjects, from low and middle socioeconomic classes, were tested by randomly selected black or white female examiners. The performance of the black preschoolers on the Goodenough Drawing Test was significantly negatively influenced by white examiners. Of interest are their findings that the middle class subjects of both races scored higher than the lower class subjects, regardless of examiner's race. Ratusnik and Koenigsknecht conservatively conclude that on particular tasks, quite possibly those producing high anxiety levels in the subjects, racial factors may significantly affect performance.

In a comprehensive search of the literature on ethnic identification and preference, Brand, Padilla & Ruiz (1974) also conclude that the amount of anxiety, tension or defensive behavior the task produces in the subject may be the crucial factor. Citing the inconsistent conclusions in much of the research, they suggest further investigation controlling the interactions of task, subject/observer status, and reinforcement. They hypothesize that examiner or model racial variables may be more significant in situations that are more personal than impersonal, and those that elicit high anxiety.

Model/observer Characteristics: Nurturance and Identification

Identification theorists such as Mowrer (1960a, 1960b) and child-rearing theorists such as Sears (1965) regard nurturance, the non-contingent bestowal of affection, as necessary for the development

of identification and, thus, imitative learning. Indications are that, while a nurturant relationship is not a necessary antecedent to, it does foster, imitative learning (Bandura & Walters, 1963).

Direct Reinforcement

There is an extensive literature (Flanders, 1968; Hamblin, Buckholdt, Ferritor, Kozloff & Blackwell, 1971) demonstrating a basic hypothesis of behavioral and modeling theory: that subjects will increase imitative behaviors to obtain contingent reinforcements such as food (Hicks, 1965), food and toys (Bandura, 1965), food and the utterance of verbal approvals by an adult (Baer & Sherman, 1964), and knowledge of task outcome (Rosenhan & White, 1965). Although it is certainly desirable to differentiate between response acquisition and performance in behavioral research, Bandura (1969a) and others (Flanders, 1968; Maccoby & Wilson, 1957) discuss the difficulties in discerning differential levels of learning.

Vicarious Reinforcement

If an intermediate goal of a training or educational program is general imitation of a model across stimuli and reward conditions, then the effects of vicarious reinforcement are of paramount concern. Although there is no definitive conclusion regarding the relative power of direct versus vicarious reinforcement (Bryan, 1975; Flanders, 1968), there is support for the notion that vicarious reinforcement facilitates imitation of previously unperformed behaviors (Bandura, 1965). Rosenhan (1972) discussed the subleties of this complex relationship in a clarifying summary review.

Many researchers now subscribe to the contiguity theory holding that response acquisition is highly dependent on stimulus contiguity,

while response performance is highly influenced by immediate or anticipated reinforcement (Bandura, 1969a).

Self-reinforcement

The precise role played by vicarious and direct reinforcement in the development of self-reinforcement is far from clear (Rosenhan, 1972). Certainly, humans rarely receive direct training in self-reinforcement. Consequently, much of a person's particular patterns of self-reinforcement may be based on observed models and their criteria and schedules for self-reinforcement (Bandura & Kupers, 1964). In turn, self-reinforcement may serve as a powerful incentive for the acquisition, performance, and maintenance of other behaviors.

CLASSIFICATION OF MODELED BEHAVIORS

Anti-social

Research on observational learning has been predominantly concerned with the performance of modeled aggressive, anti-social behaviors (Wispe, 1972). Most early researchers (Mowrer, 1960a, 1960b, 1960c; Mussen & Rutherford, 1961) investigating the basic processes in imitation, later investigations into the subject state and modeling (Berkowitz & Geen, 1966, 1967; Berkowitz & Rawlings, 1963; Walters, Marshall & Shooter, 1960; Walters & Parke, 1964), and more recent studies concerned with precise manipulation of the complex observational learning process (Bandura, 1969a, 1969b, 1971; Milgram & Shotland, 1973) utilized models exhibiting anti-social behaviors.

Bandura's classic study (Bandura, Ross & Ross, 1961) of imitation of film-mediated aggressive models, representative of most research in the area, highlights a basic weakness found in imitative learning

research. The subjects are carefully scored for imitative and nonimitative aggressive, anti-social acts. While there is provision for the scoring of nonaggressive, pro-social behaviors, such observation is not detailed and, most importantly, frequently not reported (Bandura, Ross & Ross, 1961; Hartmann, 1969; Hicks, 1965; Rosekrans & Hartup, 1967). Commonly, other researchers in observational learning (Berkowitz & Geen, 1966; Hartmann, 1969; Rosekrans & Hartup, 1967) limit the equipment available to subjects during postintervention periods and so effectively discourage pro-social acts. While the importance of research on observational learning of aggressive, anti-social behaviors cannot be denied, further investigation of observational learning of pro-social acts is clearly called for.

Pro-social

Extensive research in the area of operant behaviorism can be cited for more precise investigations into pro-social imitative learning (Bryan, 1975; see Hamblin, Buckholdt, Ferritor, Kozloff & Blackwell, 1971, for examples). Although detailed discussion of operant conditioning literature is beyond the scope of this review, one can conclude that the overlapping interests of behaviorists and observational learning theorists (Risley & Wolf, 1967; Bandura, 1969b, Baer, Peterson & Sherman, 1967; Lovaas, Freitgs, Nelson & Whalen, 1967; Azrin and Lindsley, 1956; Berger, 1961), particularly in the area of acquisition versus performance (Bandura, 1969a; Flanders, 1968), demonstrate the clearest expression of concern for the learning of pro-social behaviors.

Investigations into pro-social learning by deviant populations can be viewed from the perspective of complexity and location of elicited

task. A review of the meager research efforts in observational, as opposed to operant, learning reveals research that attempts to elicit behaviors on a continuum from very specific tasks in a laboratory setting to general orientation in a naturalistic setting.

Research attempts to elicit situation specific behaviors are exemplified by Madsen and Connor's (1973) work on the cooperative and competitive behavior of retarded versus non-retarded children. Results showed that younger children and the retarded are more spontaneously cooperative, and the retarded subjects are more prone to switch from spontaneously competitive to cooperative behaviors after cooperative modeling. The inflexible competitiveness of the non-retarded subjects was consistent with earlier findings (Kagan & Madsen, 1971).

While such investigations are helpful in establishing a knowledge base for the acquisition of specific pro-social behaviors, the behaviors elicited are not necessarily generalizable by subjects to natural situations. The isolated laboratory setting and specific type of cooperation required by the experimental apparatus impede general theorizing. When one looks for research on acquisition of cooperative behavior in naturalistic settings, descriptive studies predominate (Severy and Davis, 1971).

As discussed in extensive literature reviews by Wispe (1972) and Rosenhan (1972), most cooperative behavior is investigated from an operant learning perspective. Vogler, Masters and Morrill (1970) reported detailed studies of the effects of direct reward or cooperation. Mithaug (1969) and Mithaug and Burgess (1968) focussed on reinforcement delivered to triades,both as a group and as individuals. The power of

group rewards on cooperative behavior has been clearly shown in Nelson and Madsen's work (1968). Their findings, that individually based reward systems are likely to increase competitiveness at the expense of cooperative behavior, are of particular concern to the many institutions which practice control of behavior through the use of individual reward, while they set cooperation as a goal.

Other researchers have attempted to elicit specific, rather than general, pro-social behaviors from deviant subpopulations. Risley and Wolf (1967) established functional speech in echolalic children in a laboratory setting. Baer, Peterson & Sherman (1967), using operant procedures to initially elicit imitative behaviors, trained retarded subjects on a wide variety of specific simple tasks performed in the laboratory. Edelstein and Eisler's (1976) work with a schizophrenic paranoid adult increased eye contact, head or hand gestures, and positive affect from subject to model, in a clinical setting. Reduction of phobias in laboratory settings have been achieved by Bandura, Blanchard and Ritter (1969) and Bandura and Menlove (1968).

Lovaas, Freitas, Nelson and Whalen (1967) attempted the crucial transition of learned behaviors, elicited in a laboratory setting, to natural situations, for selected subjects. During their extensive operant and observational training program for eleven severely schizophrenic or autistic children, an unspecified number of subjects demonstrated their acquired complex behaviors in play situations, at home, or in the classroom. Their research presents a significant segment of the continuum from specific behaviors learned in the laboratory to generalized pro-social behaviors performed in natural settings.

Ideally, transitional research such as this could serve as a prototype for future investigations into pro-social behavior. Preliminary research should serve as a foundation for investigation into the transfer of performance from the laboratory into the natural environment.

Such a movement would add a final segment onto the continuum of elicited pro-social behaviors. The operant techniques for eliciting precise behaviors in clinical settings have been perfected in the last decade. The power of the combination of these operant procedures with imitation of modeled behaviors has been clearly shown by researchers such as Bandura (1965, 1969a, 1969b) and Lovaas (Lovaas, Freitas, Nelson & Whelan, 1967). The transition from the laboratory to the "real world" is the final, logical step.

Paradoxically, this transition has been demonstrated by performers of anti-social behaviors. The violent, aggressive acts modeled on television, may have already made the transition to performance in the "real world". It thus becomes imperative that investigation into the acquisition of pro-social behaviors by all segments of our society be accelerated.

CURRENT INVESTIGATION

The present investigation, which attempts to induce pro-social, cooperative interaction within dyads of severely withdrawn children, is a response to previous researchers' focus on the power of television as an anti-social, negative force. Exploration of television's possibilities as a positive, pro-social modeling source is critically needed if television is to become an instrument for inculcating pro-social behavior in children.

The study used telvised mdoels to elicit pro-social verbal and non-verbal interaction within dyads of severely withdrawn emotionally disturbed children.

The hypothesis predicted that paired severely withdrawn subjects exposed to a videotape showing cooperative pro-social interaction between models will produce a greater quantity of language, produce more pro-social language, demonstrate more pro-social proximal movements, and engage in more associative and cooperative behaviors than will comparably withdrawn subjects exposed to a videotape showing no social interaction between models.

The subjects were selected from students in a day treatment center for severely disturbed, a private school for emotionally disturbed, preplacement special education classes in a large urban district, and a state institution serving both in- and out-patient emotionally disturbed and socially maladjusted children.

All of the facilities serve children who have been segregated from the mainstream for exhibiting behaviors that are not easily tolerated by the public. Whether labled "emotionally disturbed," "socially maladujusted," "behaviorally disorded," or "PINS children," they are considered sufficiently deviant to require special, segregated educational (and in some cases residential) placement. Approximately 18% of these special education children were designated as withdrawn on two screening forms completed by the classroom teachers.* The subjects, ages 9 to 14 years, were those who had been described on the first

*Mean interrater reliability for the first screening form was 92.8%, and for the second form was 82.0%.

screening form as having at least a 10 minute attention span for play activities, sufficient English language for social interaction, and best portrayed by a paragraph specifying withdrawn behavior and who had been rated withdrawn on at least four of six items on the second screening form.

These characteristics were used to select subjects in order to insure that they were potentially capable of focusing their attention on the experimental intervention and potentially capable of pro-social verbal interaction in English, even though they exhibited little spontaneous pro-social interaction with peers prior to intervention.

At each site, subjects were separated into dyads matched for sex and age. In all cases, no subject was paired with a classmate or cottagemate. Random assignment to experimental and control groups resulted in 3 female and 7 male dyads, 20 subjects, in each group.

Each dyad was observed on videotape during a five minute pre-intervention and 10 minute postintervention period as they played with marble raceway toys. Each intervention videotape consisted of two identical modeling sequences of four minutes each. The experimental subjects viewed a tape showing two models engaged in verbal and nonverbal cooperative interactive play with the marble raceways. The control subjects viewed a tape showing the two models playing independently with the raceways without any verbal or nonverbal interaction. The pre- and postintervention observation tapes were independently coded by trained observers on five instruments measuring aspects of verbal and nonverbal social behavior.

The videotape was run for randomly selected periods, ranging from

10 to 15 seconds, stopped, and then the observer coded his subject on the behaviors being exhibited at that moment on the two Non-verbal Interaction Measures, and rated the subject's predominant behavior during the lapsed period on the General Interaction Measure. During a second viewing, the subject's verbalizations were counted for the Oral Expression Quantity Scale, and then coded according to the Oral Expression Quality Scale.

This coding on five scales resulted in approximately 23 preintervention and 49 postintervention raw scores on each of the two Non-verbal Interaction Measures and on the General Interaction Measure, and a pre- and postintervention Oral Expression Quantity count and proportionate number of Oral Expression Quality raw scores for each of the 40 subjects.

Analysis

The raw scores on each of the five scales resulted in five single scores for each individual subject, and then averaged into a pooled score for each pair of subjects, for both pre- and postintervention periods.

This conversion of raw scores into single scores for each pair resulted in pre- and postintervention scores for each pair, on each of the five measures. Different scores were then calculated for the paired subjects by subtracting the postintervention scores from the pre-intervention scores.

The basic format for the statistical analysis initially approached each of the five measures independently comparing pre- and postintervention for the experimental and control groups. For each measure, descriptive statistics according to sex of subject were based on dif-

ference scores. ANOVA was calculated for sex x treatment interactions. Lastly, intercorrelations between the five measures were calculated.

Results

Hypothesis 1, part (a) predicted that subjects who viewed the co-operative interaction videotape would produce a greater quantity of language. There is no evidence that the difference score means differed for male versus female, experimental versus control subjects, and there was no interaction for sex x treatment for the Oral Expression Quantity Scale.

Part (b) of Hyposthesis 1 stated that subjects who watched the cooperative interaction tape would use more pro-social language. Analysis showed that control and experimental subjects scored differently on the Oral Expression Quality Scale, supporting the research hypothesis (p. .015). Part (b) of the Hypothesis is further strengthened by the lack of main effect for sex, and interaction effect for sex x treatment.

The evidence is that subjects who viewed a cooperative interaction tape will not necessarily produce a greater quantity of language than subjects who viewed a non-interaction tape, but will use more pro-social language. The relationship between these Verbal Interaction Measures was shown to be non-significant.

Hypothesis 2 claimed that subjects who watched the cooperative interaction tape would demonstrate (a) more pro-social proximal and (b) more pro-social face-to-face body movements than would subjects who watched the non-interaction tape.

The ANOVA for both scales, support the research hypothesis at

at the .001 level. For both Non-verbal Interaction Measures, the main effect of sex, and the interaction effect of sex x treatment were not significant. The significance of the main effect for treatment allows acceptance of the hypothesis that viewing the cooperative interaction tape will positively effect the interpersonal distance, body orientation, and task involvement of experimental subjects.

Hypothesis 3 predicted that subjects who viewed the cooperative interaction videotape would engage in more pro-social associative and cooperative behaviors.

The ANOVA for the General Interaction Measure, showed a main effect for treatment at the .001 level. There is no evidence that the sex x treatment interaction had a significant effect. Thus, research Hypothesis 3 is supported in its claim that subjects who watched the cooperative interaction tape would engage in more pro-social behaviors as defined by the General Interaction Measure.

If this pro-social behavior defined by the General Interaction Measure has both verbal and non-verbal components, than analysis should show substantial relationships between the two Verbal Measures, the two Non-Verbal Measures, and the General Interaction Measure. The General Interaction Measure moderately correlates with the Oral Expression Quantity and Quality Scales, with significance at the .01 level. This evidence of a relationship between General Interaction and Verbal Interaction Measure supports the hypothesis that experimental subjects would engage in more pro-social associative and cooperative behaviors. The relationship between the General Interaction Measure and the Verbal Interaction Measure was not as strong as the relationship between the

General Interaction Measure and the Non-Verbal Interaction Measures. The high correlations between the General Interaction Measure and the Non-verbal Measures, with significance .002, indicating a dependable relationship between general pro-social behaviors, as defined on the General Interaction Measure, and non-verbal behaviors, also support Hypothesis 3.

Summary of Results

Paired severely withdrawn subjects exposed to a videotape showing cooperative pro-social interaction engaged in more associative and cooperative behaviors than comparably withdrawn subjects exposed to a videotape showing no social interaction between models. In particular, the withdrawn subjects who viewed the cooperative interaction tape demonstrated more pro-social proximal and face-to-face body movements than subjects who viewed the non-interaction tape.

In addition to this significant increase in general pro-social interaction and pro-social nonverbal movements, the experimental subjects used more por-social language. The prediction that subjects who watched the cooperative interaction tape would produce more language than those who watched the non-interaction tape was not supported.

No main effect for sex of subject, or interaction effect for sex x treatment was found.

Meaning of Results

As indicated by the partial support for Hypothesis 1 and the stronger, more conclusive support found for Hypothesis 2 and 3, there appears to be differential effects of modeling on verbal and non-verbal behaviors, for severely withdrawn school-aged subjects.

Specifically, Hypothesis 2 demonstrated that models were able to effect change in the body movements of the subjects, particularly the preferred body orientation and interpersonal distance. Experimental subjects exhibited more face-to-face orientation, at a closer distance, while they were actively involved with a common object or goal. These results confirm Zimmerman and Brody's (1975) findings with normal children, that warm modeling sequences elicited more eye contact, with more direct body orientation, at a closer distance, than could a cold modeling sequence. O'Connor (1969), in research with isolate nursery school children, found similiar effects on social interaction, including physical proximity and direct observation of another child, after the subjects viewed a pro-social play sequence on videotape.

The support found for Hypothesis 3, the General Interaction Measure, adds to the notion that modeling significantly influences the pro-social, non-verbal behaviors of withdrawn children. The General Interaction Measure was based on non-verbal social behaviors. Each of the four categories of behavior coded on the measure was described in terms of specific position and degree of active interaction vis-a-vis the other subject. Verbal interaction was not described, or required, for any category. Consequently, the significant changes demonstrated with the General Interaction Measure, were actually significant changes in non-verbal pro-social behaviors.

The statistical results, which did not support part (a) of Hypothesis 1 concerning quantity of language and weakly supported part (b) concerning quality of language, indicate that models do not have a powerful effect on changing the verbal behaviors of withdrawn children.

On the surface, this specifically contradicts previous research (Zimmerman and Brody, 1975; Bandura, 1965; Hicks, 1965; Bandura, Ross and Ross, 1963b; Bandura and Huston, 1961) where models significantly increased the verbalizations of normal subjects. Close examination of the findings shows that there is one crucial differences in the experimentation: the current research concerned severely withdrawn, emotionally disturbed subjects.

One could hypothesize that verbal behavior is more resistant to change than non-verbal behaviors, in severely withdrawn children. This notion is partially supported by research attempting to elicit language from retarded (Baer, Peterson and Sherman, 1967), disturbed (Risley and Wolf, 1967), and withdrawn (O'Connor, 1969) subjects. In particular, research by Lovaas, Freitus, Nelson and Whalen (1967) suggests that verbal behaviors may be more resistant to change than non-verbal, in emotionally disturbed (autistic and schizophrenic) subjects.

One can cautiously advance the notion that the research demonstrates a resistance to change in verbal behaviors, stronger than the resistance to change in non-verbal behaviors, that is characteristic of emotionally disturbed, non-verbally oriented children. The significant results found for part (b) of Hypothesis 1 could be an indication that the subjects found it easier to change the direction and subject of their language, than change the absolute amount of language generated. The non-verbally oriented children remained basically non-verbal, but did change the quality of their language to fit their increasingly cooperative motoric behaviors.

IMPLICATIONS

The impact of the reviewed research can be seen in current clinical practice. Modeling sequences have reduced phobias, extreme anxiety related to medical and test taking stress, and increased interpersonal skills, when used in clinical settings. In their comprehensive review, Thelen, Fry, Fehrenbach and Frautschi (1979), cite the efficiency of using videotaped stimulus material: it can be produced "in house", self-administered, erased and re-used, and is portable. As research accumulates as to the effectiveness of modeling sequences, and the efficiency of videotaped material becomes more obvious, a widespread use will result.

The current research was undertaken, and the preceeding research reviewed, in order to lend impetus to this trend.

In particular, the use of videotaped modeling sequences is logical for educational and recreational, day-school and residential settings. The cost effectiveness demonstrated in individual and small group therapies would only be multiplied in larger group situations. In most educational and recreational settings, the high client:staff ratio means that a disproportionate amount of staff attention is focused on the most aggressive clients. Often, this means that the more withdrawn client is left to his/her own devices. They are often allowed to continue or even increase a-social behavior patterns. Since the use of videotaped sequences does not require the sustained attention of staff, while providing positive interaction models, its use in such settings, with such populations, should be encouraged.

Cost conscious administrators and overloaded staff could find an

efficient therapeutic technique in the consistant use of videotaped sequences. The "in house" production of the modeling sequences would mean that they could be setting specific, aimed at particular clients, use equipment commonly found at the site, and model behaviors pinpointed by staff.

By using site specific modeling sequences, professionals could actively affect the a-social behavior of clients, rather than allow non-destructive, but non-productive, behaviors to continue. In this way, videotaped modeling sequences would enhance the active role of frequently overloaded professionals, and enhance the opportunities for treatment of frequently ill-served clients.

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